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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 9187-2 (1980): Deflection Coil Units Used with TV Picture Tubes, Part 2: Type DCU I S for 470 mm, 510 mm, 590 mm and 610 mm TV Picture Tubes [LITD 5: Semiconductor and Other Electronic Components and Devices]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

(Reaffirmed 2004)

SPECIFICATION FOR DEFLECTION COIL UNITS USED
WITH TV PICTURE TUBESPART II TYPE DCU IS FOR 470 mm, 510 mm, 590 mm
AND 610 mm TV PICTURE TUBES

0. General — This standard shall be read in conjunction with IS: 9187 (Part I)-1979 'Specification for deflection coil units used with TV picture tubes: Part I General requirements and tests'.

1. Type Designation — This deflection coil unit shall be designated as 'deflection coil unit type DCU 1S'.

DCU means deflection coil unit

1 represents TV picture tubes of sizes 470 mm, 510 mm, 590 mm and 610 mm, and

S denotes solid state circuitry.

2. Application — The deflection coil unit type DCU 1S is meant for use with 470 mm, 510 mm, 590 mm and 610 mm, 110° to 114° black and white picture tube in conjunction with:

- a) line output transformer used with TV picture tubes, type LOT 1S for 470 mm, 510 mm, 590 mm and 610 mm TV picture tubes

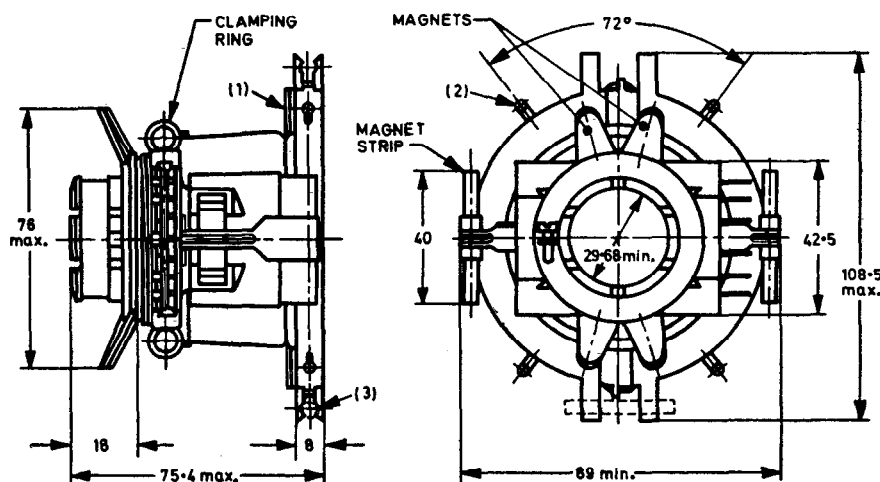
[see Indian Standard Specification for line output transformer used with TV picture tubes, type LOT 1S for 470 mm, 510 mm, 590 mm and 610 mm TV picture tubes (*under preparation*)]

- b) linearity control unit used with TV picture tubes, type LCU 1S for 470 mm, 510 mm, 590 mm and 610 mm TV picture tubes

[see Indian Standard Specification for linearity control unit used with TV picture tubes, type LCU 1S for 470 mm, 510 mm, 590 mm and 610 mm TV picture tubes (*under preparation*)]

3. Description — The saddle-shaped line deflection coils shall be mounted on moulded case so that the deflection centre shall be well within the conical part of the picture tube. The field deflection coils shall be wound on a ferrite yoke ring which is flared so that the frame and line deflection centres coincide. The relative positions of the frame and line deflection coils are so adjusted that their fluxes are at right angle to each other. The unit shall meet the self-extinguishing and non-dripping requirements of Indian Standard 'Safety requirements for mains operated electronic and related apparatus for household and similar general use' (*under preparation*).

4. Outline and Dimensions — The outline and the dimensions shall be according to Fig. 1.



Magnet positions (1), (2) and (3) as shown above

All dimensions in millimetres.

FIG. 1 OUTLINE AND DIMENSIONS

5. Mounting — The deflection unit shall be mounted as far forward as possible on the neck of the picture tube, so that it touches the cone. To orient the raster correctly, the unit may be rotated by hand on the neck of the picture tube with which it shall make a slip fit. A screw-tightened clamping ring shall permit it to be locked, both axially and radially, in the desired position.

Adopted 30 January 1980

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Gr 3

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6. General Specifications

- | | |
|--------------------------------|-----------------------------------|
| a) Picture tube types | 470 mm, 510 mm, 590 mm and 610 mm |
| Neck diameter | 28 mm nominal |
| Deflection angle | 110° to 114° |
| b) Outline and dimensions | See Fig. 1 |
| Pins for connection | Solderable |
| c) Category temperature | Minimum 10°C |
| | Maximum 70°C |
| d) Maximum winding temperature | 100°C |

7. Electrical Specifications — The values shall be measured on ambient temperature of 25°C.

- | | |
|---|--|
| a) Line deflection coils, parallel connected (see Fig. 2A) | |
| connecting terminals 3 and 4 | |
| Inductance | 3.32 mH $\pm$ 5 percent |
| Resistance | 6.1 Ω $\pm$ 10 percent |
| b) Field deflection coils, parallel connected (see Fig. 2B) | |
| connecting terminals 1 and 6 | |
| Inductance | 17 mH $\pm$ 10 percent |
| Resistance | 7.5 Ω $\pm$ 8.5 percent |
| c) Sensitivity | |
| Deflection current edge to edge | Measured with EHT 18 kV and reference picture tube |
| In line direction | 2.30A peak to peak $\pm$ 7 percent |
| In frame direction | 1.1A peak to peak $\pm$ 3.5 percent |
| d) Raster distortion | |
| (measured without correction magnets) | |
| Barrel distortion in the corners | Maximum 1 mm |
| Pin cushion distortion | The edges of the raster fall within the two rectangles (see Fig. 3A) |
| Trapezium distortion | The edges of the raster fall within the two rectangles (see Fig. 3B) |

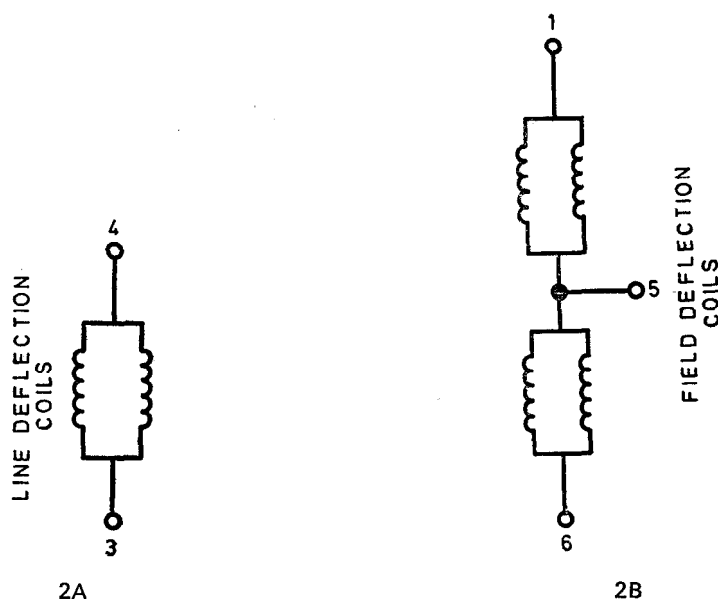


FIG. 2 COIL SCHEMATIC CONNECTIONS

8. Geometric Distortion — The geometric distortion shall be in accordance with Fig. 3.

9. Correction Facility

9.1 For Centring — The beam centring magnets shall have an area of adjustment from less than 5 mm to greater than 45 mm diameter of the electron beam.

9.2 Pin Cushion Distortion — The correction magnets shall be provided for correction of pin cushion distortion.

9.3 For Corner Magnets — To correct the corners of the raster, small plastic bounded ferrite magnets may be used, if required. Facility shall be provided for mounting these magnets on the periphery of the moulding.

10. Marking — See 6 of IS : 9187 (Part I)-1979.

11. Materials, Construction and Workmanship — See 5 of IS : 9187 (Part I)-1979.

12. Classification of Tests — See 7.2 of IS : 9187 (Part I)-1979.

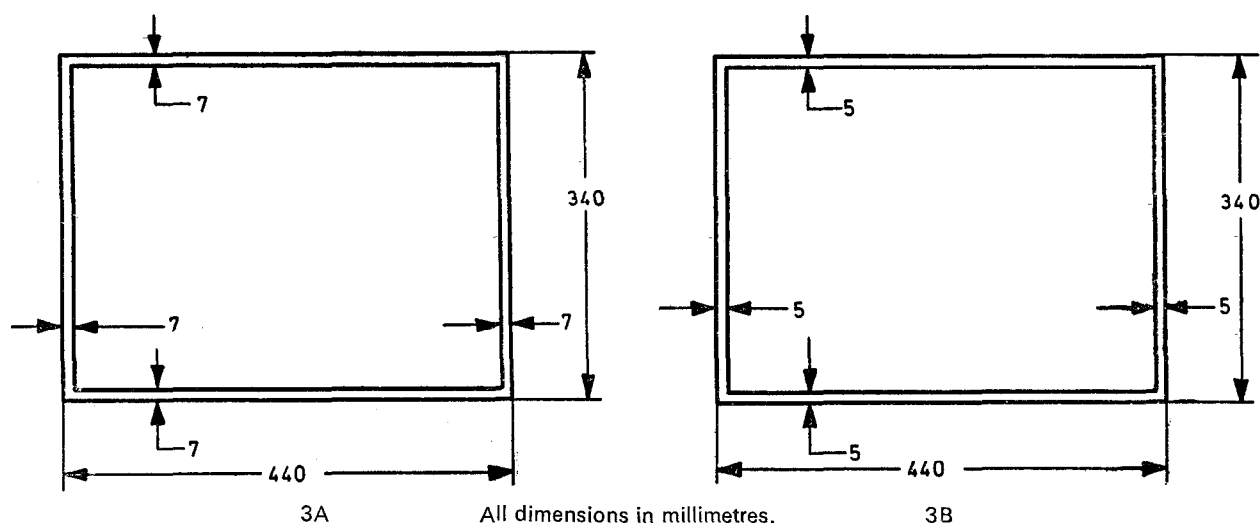


FIG. 3 GEOMETRIC DISTORTION

12.1 *General Conditions for Tests* — See 7.1 of IS: 9187 (Part I)-1979.

12.2 The test schedule and the requirements shall be in accordance with Table 1.

TABLE 1 TEST SCHEDULE AND REQUIREMENTS

Sl No.	Test	Clause Ref of IS: 9187 (Part I)-1979	Condition of Test	Requirements
(1)	(2)	(3)	(4)	(5)
i) <i>All Samples</i>		—	—	—
a) Visual examination		7.3.1	—	The workmanship, condition and finish shall be satisfactory. The marking shall be legible.
b) Dimensions		7.3.2	—	The dimensions shall conform to the dimensions shown in Fig. 1.
c) Continuity of winding		7.4.2	—	Each winding shall be continuous.
d) Operating current		7.4.1	—	The operating current shall be in accordance with 7(c).
e) DC resistance		7.4.3	—	The dc resistance shall be in accordance with 7(a) and 7(b).
f) Inductance		7.4.4	—	The inductance shall be in accordance with 7(a) and 7(b).
g) Voltage-proof		7.4.7	—	There shall be no breakdown or flashover at 2 kV ac.
h) Insulation resistance		7.4.8	—	1 000 M Ω Min at 500 V dc.
j) Deflection sensitivity (with accelerating voltage)		7.4.5	—	The peak to peak current flowing through the line deflection coils as well as frame deflection coils shall be in accordance with 7(c).
k) Distortion (pin cushion, barrel effect and perpendicularity/trapezium)		7.4.6	—	The picture outline distortion shall be as shown in Fig. 3.
ii) <i>First Group</i>				
a) Soldering		7.6	—	—
1) Visual examination		7.3.1	—	There shall be no damage.
2) Continuity of winding		7.4.2	—	Each winding shall be continuous.
b) Robustness of terminations		7.7	—	—
1) Visual examination		7.3.1	—	There shall be no damage.
2) Continuity of winding		7.4.2	—	Each winding shall be continuous.
c) Bump		7.8	1 000 bumps for 10 g	—
1) Visual examination		7.3.1	—	There shall be no damage.
2) Continuity of winding		7.4.2	—	Each winding shall be continuous.

(Continued)

TABLE 1 TEST SCHEDULE AND REQUIREMENTS — *Contd*

SI No.	Test	Clause Ref of IS: 9187 (Part I)-1979	Condition of Test	Requirements
(1)	(2)	(3)	(4)	(5)
d)	Vibration	7.9	10 to 55Hz, duration 6 hours	—
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.2	—	Each winding shall be continuous.
	3) DC resistance	7.4.3	—	DC resistance shall be in accordance with 7(a) and 7(b).
	4) Inductance	7.4.4	—	Inductance shall be in accordance with 7(a) and 7(b).
	5) Insulation resistance	7.4.8	—	1 000 M Ω , <i>Min</i> at 500 V dc.
	6) Voltage-proof	7.4.7	—	There shall be no breakdown or flashover at 2 kV ac.
e)	Shock	7.14	30 g, duration 18 ms	—
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.2	—	Each winding shall be continuous.
	3) DC resistance	7.4.3	—	DC resistance shall be in accordance with 7(a) and 7(b).
	4) Inductance	7.4.4	—	Inductance shall be in accordance with 7(a) and 7(b).
	5) Insulation resistance	7.4.8	—	1 000 M Ω , <i>Min</i> at 500 V dc.
	6) Voltage-proof	7.4.7	—	There shall be no breakdown or flashover at 2 kV ac.
f)	Acceleration	7.15	20 g	—
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.2	—	Each winding shall be continuous.
	3) DC resistance	7.4.3	—	DC resistance shall be in accordance with 7(a) and 7(b).
	4) Inductance	7.4.4	—	Inductance shall be in accordance with 7(a) and 7(b).
	5) Insulation resistance	7.4.8	—	1 000 M Ω , <i>Min</i> at 500 V dc.
	6) Voltage-proof	7.4.7	—	There shall be no breakdown or flashover at 2 kV dc.
g)	Climatic	7.10	—	—
	1) Dry heat	7.10.2	At <i>Max</i> category temp (70°C or 100°C)	—
	i) Insulation resistance	7.4.8	—	1 000 M Ω at 500 V dc.
	Note — The dry heat test shall be carried out at maximum temperature 70°C by loading the deflection coil units with the appropriate current and voltage or at maximum temperature 100°C on no load.			
	ii) Visual examination	7.3.1	—	There shall be no damage.
	iii) Insulation resistance	7.4.8	—	1 000 M Ω at 500 V dc.
	2) Damp heat (accelerated) first cycle	7.10.3	—	—
	i) Visual examination	7.3.1	—	There shall be no damage.
	ii) Insulation resistance	7.4.8	—	1 000 M Ω at 500 V dc.
	3) Cold	7.10.4	+10°C	—
	i) Visual examination	7.3.1	—	There shall be no damage.
	ii) Continuity of winding	7.4.2	—	Each winding shall be continuous.
	iii) Voltage-proof	7.4.7	—	There shall be no breakdown or flashover at 2 kV.

(Continued)

TABLE 1 TEST SCHEDULE AND REQUIREMENTS — *Contd*

Sl No.	Test	Clause Ref of IS: 9187 (Part I)-1979	Condition of Test	Requirements
(1)	(2)	(3)	(4)	(5)
	4) Air pressure (low)	7.10.5	60 kPa	There shall be no breakdown or failure of mechanical deterioration.
	5) Damp heat (accelerated) remaining cycle	7.10.6	—	—
	i) Visual examination	7.3.1	—	There shall be no damage.
	ii) Continuity of winding	7.4.2	—	Each winding shall be continuous.
	iii) DC resistance	7.4.3	—	DC resistance shall be in accordance with 7(a) and 7(b).
	iv) Inductance	7.4.4	—	Inductance shall be in accordance with 7(a) and 7(b).
	v) Insulation resistance	7.4.8	—	1 000 M Ω , <i>Min</i> at 500 V dc.
	vi) Voltage-proof	7.4.7	—	There shall be no breakdown or flashover at 2 kV ac.
iii)	<i>Second Group</i>			
	a) Damp heat (long-term exposure)	7.11	—	—
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.2	—	Each winding shall be continuous.
	3) DC resistance	7.4.3	—	DC resistance shall be in accordance with 7(a) and 7(b).
	4) Inductance	7.4.4	—	Inductance shall be in accordance with 7(a) and 7(b).
	5) Insulation resistance	7.4.8	—	1 000 M Ω , <i>Min</i> at 500 V dc.
	6) Voltage-proof	7.4.7	—	There shall be no breakdown or flashover at 2 kV ac.
iv)	<i>Third Group</i>			
	a) Endurance (electrical)	7.16	—	—
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.2	—	Each winding shall be continuous.
	3) DC resistance	7.4.3	—	DC resistance shall be in accordance with 7(a) and 7(b).
	4) Inductance	7.4.4	—	Inductance shall be in accordance with 7(a) and 7(b).
	5) Insulation resistance	7.4.8	—	1 000 M Ω , <i>Min</i> at 500 V dc.
	6) Voltage-proof	7.4.7	—	There shall be no breakdown or flashover at 2 kV ac.
	b) Flammability	7.17	—	Burning particles shall not detach from the components.
v)	<i>Fourth Group</i>			
	a) Mould growth	7.12	—	—
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.2	—	Each winding shall be continuous.
vi)	<i>Fifth Group</i>			
	a) Temperature-rise	7.5	—	The temperature-rise shall not exceed 30°C.
vii)	<i>Sixth Group</i>			
	a) Salt mist	7.13	—	—
	1) Visual examination	7.3.1	—	There shall be no damage.
	2) Continuity of winding	7.4.2	—	Each winding shall be continuous.